IN THE CLAIMS

1. (Currently Amended) A method for reducing power requirements for a microprocessor, the steps comprising:

a) providing within a microprocessor at least one datapath resource whose ~~size~~ resource allocation may be dynamically altered;

b) dynamically estimating a ~~size~~ resource allocation requirement for said at least one datapath resource responsive to a need therefore by a program being executed within said microprocessor, comprising using sampled estimates of a usage for said at least one datapath resource by said program being executed;

c) dynamically altering the ~~size~~ resource allocation of said at least one datapath resource responsive to said ~~size~~ resource allocation requirement estimate; and

d) reducing power consumption from an unused portion of said at least one datapath resource.

2. (Original) The method for reducing power requirements for a microprocessor in accordance with claim 1, wherein said at least one datapath resource comprises discrete resource units.

3. (Original) The method for reducing power requirements for a microprocessor in accordance with claim 2, wherein said at least one datapath resource may have at least one of said discrete resource units allocated thereto and deallocated therefrom.

4. (Cancelled).

5. (Currently Amended) The method for reducing power requirements for a microprocessor in accordance with claim 1 4, wherein said sampled estimates comprises periodic measurement within at least one update period of said need

for said at least one datapath resource by said program being executed.

6. (Currently Amended) The method for reducing power requirements for a microprocessor in accordance with claim 5, wherein said update period is dynamically determined ~~by at least one of the methods: dynamically determined, and predetermined~~.

7. (Original) The method for reducing power requirements for a microprocessor in accordance with claim 1, wherein said dynamically altering step (c) comprises at least one of the sub-steps: allocating at least one additional discrete resource unit to said at least one datapath resource, and deallocating at least one discrete resource unit from said at least one datapath resource.

8. (Original) The method for reducing power requirements for a microprocessor in accordance with claim 1, wherein said at least one datapath resource comprises a resource used as a FIFO queue.

9. (Original) The method for reducing power requirements for a microprocessor in accordance with claim 1, wherein said at least one datapath resource comprises at least one of the resource types: an IQ, an LSQ, an ROB, a PRF, and an RF.

10. (Currently Amended) The method for reducing power requirements for a microprocessor in accordance with claim 7, wherein said at least one resource unit is allocated more rapidly than said at least one resource unit is deallocated.

11. (Original) The method for reducing power requirements for a microprocessor in accordance with claim 7, wherein said dynamically altering step (c) comprises the

sub-step: deallocating at least one discrete resource unit from said at least one datapath resource, and wherein said deallocating sub-step is performed substantially at an end of said update period.

12. (Original) The method for reducing power requirements for a microprocessor in accordance with claim 7, wherein said dynamically altering step (c) comprises the sub-step: allocating at least one discrete resource unit to said at least one datapath resource, and wherein said allocating sub-step is performed substantially during said update period, and wherein said update period is terminated upon completion of said allocating said at least one discrete resource unit.

13. (Original) The method for reducing power requirements for a microprocessor in accordance with claim 12, wherein said sub-step of allocating at least one discrete resource unit to said at least one datapath resource, comprises starting a new update period.

14. (Currently Amended) The method for reducing power requirements for a microprocessor in accordance with claim 1 ~~4~~, wherein said ~~statistical analysis~~ sampled estimates of said need for said at least one datapath resource ~~is performed in~~ are determined during an estimation interval.

15. (Currently Amended) The method for reducing power requirements for a microprocessor in accordance with claim 1, the steps further comprising:

e) using said ~~size~~ resource allocation requirement estimate to dynamically control a rate of instruction dispatch in said microprocessor.

16. (Currently Amended) The method for reducing power requirements for a microprocessor in accordance with claim 1, the steps further comprising:

e) using said ~~size~~ resource allocation requirement estimate to selectively adjust a clock rate to at least one of the microprocessor components: ~~instruction cache, an execution unit, clusters of registers, function units, and other microprocessor component~~.

17. (New) The method for reducing power requirements for a microprocessor in accordance with claim 16, wherein the clock rate of a microprocessor execution unit is adjusted.

18. (New) The method for reducing power requirements for a microprocessor in accordance with claim 16, wherein the clock rate of a microprocessor instruction cache is adjusted.

19. (New) The method for reducing power requirements for a microprocessor in accordance with claim 16, wherein the clock rate of at least one microprocessor register file is adjusted.

20. (New) A method for reducing power requirements for a processor, comprising the steps of:

a) providing within a processor at least one datapath resource whose allocation may be dynamically altered;

b) dynamically estimating an allocation requirement for said at least one datapath resource responsive to a need therefore by a program being executed within said processor;

c) dynamically altering the allocation of said at least one datapath resource responsive to said allocation requirement estimate;

d) reducing power consumption from an unused portion of said at least one datapath resource; and

e) using said allocation requirement estimate to selectively adjust a clock rate to at least one of the processor components.

21. (New) The method according to claim 20, wherein the clock rate of a processor execution unit is adjusted.

22. (New) The method according to claim 20, wherein the clock rate of at least one of a processor instruction cache and a data cache is adjusted.

23. (New) The method according to claim 20, wherein the clock rate of at least one processor register file is adjusted.

24. (New) The method according to claim 20, wherein said at least one datapath resource comprises at least one discrete resource unit which may be selectively allocated and deallocated with respect thereto.

25. (New) The method according to claim 20, wherein said at least one resource unit is allocated more rapidly than said at least one resource unit is deallocated.

26. (New) The method according to claim 20, further comprising the step of:

f) using said resource requirement estimate to dynamically control a rate of instruction dispatch in said processor.

27. (New) A method for reducing power requirements for a processor, comprising the steps of:

a) providing within a processor at least one datapath resource whose allocation may be dynamically altered;

b) dynamically estimating an allocation requirement for said at least one datapath resource responsive to a need therefore by a program being executed within said processor;

c) dynamically altering the allocation of said at least one datapath resource responsive to said allocation requirement estimate;

d) reducing power consumption from an unused portion of said at least one datapath resource; and

e) using said allocation requirement estimate to dynamically control a rate of instruction dispatch in said processor.

28. (New) The method according to claim 27, further comprising the step of:

f) using said allocation requirement estimate to selectively adjust a clock rate to at least one of the processor components.

29. (New) The method according to claim 27, wherein said at least one datapath resource comprises at least one discrete resource unit which may be selectively allocated and deallocated with respect thereto.

30. (New) The method according to claim 27, wherein said at least one resource unit is allocated more rapidly than said at least one resource unit is deallocated.

31. (New) A method for reducing power requirements for a processor, comprising the steps of:

a) providing within a processor at least one datapath resource whose allocation may be dynamically altered, said at least one resource unit being allocated more rapidly than said at least one resource unit is deallocated;

b) dynamically estimating an allocation requirement for said at least one datapath resource responsive to a need therefore by a program being executed within said processor;

c) dynamically altering the allocation of said at least one datapath resource responsive to said allocation requirement estimate; and

d) reducing power consumption from an unused portion of said at least one datapath resource.

32. (New) The method for reducing power requirements for a microprocessor in accordance with claim 1, wherein the resource comprises a plurality of subunits, the allocation representing a number of subunits of the resource made available to the microprocessor.

33. (New) The method for reducing power requirements for a microprocessor in accordance with claim 1, the steps further comprising:

e) using said resource allocation requirement estimate to selectively adjust a supply voltage to at least one of the microprocessor components.

34. (New) The method for reducing power requirements for a microprocessor in accordance with claim 33, the steps further comprising:

f) using said resource allocation requirement estimate to selectively adjust a clock rate to at least one of the microprocessor components.